

### **REMARKS / ARGUMENTS**

This is in response to the examiner's letter mailed 12/06/2005.

It is noted that the examiner has issued a second non-final action in respect of this application. In the first office action mailed June 13, 2005, the examiner rejected certain claims in view of references Bland, U.S. 6,517,631 ('631) and Ehrlich, U.S. 4,411,879 ('879). The examiner's rejections were pursuant to 35 USC 103. In that first office action, the examiner indicated that originally filed claims 16 to 18 would be allowable if rewritten in independent form, including all of limitations of the base claim and any intervening claims. In applicant's response, applicant presented new claim 29 directed to the matter indicated as containing patentable subject matter in the examiner's report mailed June 13<sup>th</sup>. In addition, applicant addressed the examiner's Bland '631 reference and presented arguments that Bland was in an entirely different field using only a common starting part, that is, combustion ash.

Notwithstanding the examiner's previous indication of patentable subject matter, the examiner appears to have changed position and is now rejecting claim 29 (claim 16 rewritten as requested) as being obvious under 35 USC 103(a) in view of the same reference Ehrlich '879 previously cited by the examiner. The examiner's comments in the present office action are identical to those set out in the first office action with the exception of one additional sentence. In this sentence, the examiner states that Ehrlich "also teaches that the dust cake (ash and coal fines) may be mixed with dry crushed coal (drying agent) and fed into the fluidized bed combustor (see col. 3, lines 3-23)". The examiner continues to point out what the examiner considers to be differences between Ehrlich and claim 29 and those claims dependent thereon

In view of the examiner's previous comments that claim 16 distinguished over Ehrlich for reasons set out in the office action mailed June 13, 2005, applicant did not otherwise fully address the examiner's remarks in light of Ehrlich '879.

It is respectfully submitted that Ehrlich involves a completely different process from that set out in claim 29. Claim 29 indicates that the process is carried out without addition of heat. Claim 29 is furthermore directed to a process of grinding wet fine coal. It is clear that this process involved mixing of wet fine coal. Wet fine coal will itself be at substantially atmospheric temperature. If the coal were at a temperature in excess of 100°C, the water would have been evaporated from the coal. As the examiner has pointed out, Ehrlich teaches that coal and fly ash are mixed at a temperature of from about 200°F to about 400°F. This means that Ehrlich for all intents and purposes, is operating well above the boiling point of water, and there would be no wet fine coal. At best, any moisture in the coal would be in the form of steam and not water.

Basically, Ehrlich teaches a system for drying a feed coal with hot fly ash. This would evaporate any water in the coal and this partially activates some calcium in the fly ash. Ehrlich teaches hydration of the fly ash only by water addition. There is no grinding of the fly ash in Ehrlich and if there is water present, it is only in the form of steam. Otherwise, Ehrlich uses the ash simply to dry the coal. It is further submitted that according to the teaching of Ehrlich, the process involves grinding the coal et al, to deal with larger particles, say in the order of one inch. There is no grinding action in Ehrlich on the ash.

In the present application, the method set out in claim 29, involves simultaneously grinding both the wet fine coal as well as the ash. Ehrlich does not grind the ash.

One of the principal advantages of the present invention is that it provides a means of utilizing wet fine coal. Wet fine coal has otherwise been treated in the past as a waste material. The coal is very fine and the coal may be stored in slurry ponds. Previously this material has not been economically usable as a feed source. The present applicants have found a way of dealing with what is otherwise essentially a

waste material. This involves simultaneously grinding that wet fine coal with ash. This both activates the ash so that it may be used in a sulphur dioxide recapture reaction, as well as presenting a way of utilizing an otherwise waste resource, that is, wet fine coal. Ehrlich does not teach that whatsoever. Clearly, Ehrlich's process is carried out at elevated temperature.

The examiner has pointed out several differences between Ehrlich and the process defined in claim 29. For instance the examiner points out that Ehrlich fails to teach grinding of the mixture of ash and wet coal. The examiner, however, takes the position that merely because Ehrlich teaches thorough mixing that that mixing is sufficient to grind the mixture to the proper consistency. It is submitted that there is no basis for the examiner's analysis in this regard. Firstly, the word "consistency" is not an appropriate word when dealing with mixtures of dry material. This term is only appropriate when discussing pastes. Thus, it is submitted, to the contrary of the examiner's position, there is nothing in Ehrlich which teaches grinding as suggested by the examiner and if the examiner is to cite the reference for this purpose then it is submitted that the examiner must find that technical disclosure within the reference in a sufficiently clear fashion, it could be said that Ehrlich teaches that grinding. As pointed out by the examiner, Ehrlich fails to teach grinding of the mixture.

The examiner indicates that Ehrlich differs from the claims in that he does not specifically teach that the mixing is carried out in a mill having positive transport capacity. The term positive transport capacity, is used in connection with the type of mill that discharges the material with some force. The examiner's comment that in Ehrlich the mixture "exits" a mixer is not indicative of whether or not the mixer has positive transport. Thus, it is believed there is no support for the examiner's comment that the teaching of Ehrlich "suggests" positive transport.

Finally, the examiner has indicated that Ehrlich fails to teach pelletization of the water/ash/coal mixture. The examiner's view that this is obvious because a skilled

artisan would pelletize if that person wished to use the mixture at a later date, is again simply without support. There is nothing in Ehrlich nor in the art generally that would say that materials to be used at a later date are necessarily palletized, as opposed to being stored in whatever form results from the preparation of the mixture.

In view of all of the foregoing, it is respectfully submitted that claim 29 is in condition for allowance and that all claims dependent directly or indirectly thereon, are also allowable.

Claim 27 as amended in applicant's response filed September 8, is directed to a process for reactivating calcium containing ash and feeding that reactivated ash to a combustor. Claim 28 is similar in its focus. The difference between the two claims being that claim 27 includes limitations concerning the amount of water present, which is not in claim 28, while claim 28 specifies that the drying agent is selected from a group of combustible materials which is not in claim 27.

The examiner has rejected both claims 27 and 28 pursuant to 35 USC 103 in view of the combination of Bland and WO. The examiner has enumerated a number of differences between Bland and the processes set out in claims 27 and 28. However, the examiner has indicated that while Bland does not teach the feeding of mixture to a combustor WO does teach that difference.

It is respectfully submitted, that there is nothing whatever in the teaching of WO which would be applicable to the teaching of Bland. WO indicates that fly ash can be taken from the bag collector, watered and then either discarded or utilized for land reclamation or a part of it may be utilized as cement. This is set out in column 2 in the paragraph commencing at line 18. The problem addressed by WO is that the coal combustion boiler may not be located convenient to land reclamation and thus there may be need for some other economic use of the fly ash, where the discard or land reclamation uses are otherwise not desirable. WO teaches that the fly ash can be

utilized in a different method by introducing the fly ash into a boiler after it has been reactivated. A method of reactivation taught by WO at least as set out in Furuya, U.S. 6,520,099 ('099) is that the fly ash is reacted with water with a substantial temperature difference. Throughout the disclosure of U.S. '099, it is pointed out that the thermal shock is used to provide expansion of the particles through hydration and to thereby have the non-reacted lime exposed out of their surface to form recycled lime particles. There is nothing whatever in WO or its apparent U.S. counterpart '099 which teaches grinding of the ash with water, let alone simultaneous grinding. In fact, WO teaches directly away from the language as claimed, as both claims 27 and 28 include the limitation "without addition of heat". The thermal shock as taught in U.S. '099 appears to be an essential feature of the disclosure of that reference.

More broadly speaking, it is submitted that there is simply no justification for suggesting that the WO reference can or would be combined with the Bland reference as suggested by the examiner. In discussing the problem to be dealt with, the WO reference sets out as background that fly ash may be treated as a waste product and used for land reclamation and even in cement and the like. WO then goes on to teach a method of reactivation involving thermal shock for purposes of reactivating the ash. Applicant does not see any suggestion in the WO reference that the treated material itself should then be used as land reclamation material. Rather, the teaching of WO seems to be that the whole point of ash reactivation is that it may not otherwise be useful to dispose of the material in land reclamation.

It is further submitted, that the Bland reference is clearly restricted to the preparation and use of a material as a road base, for use in concrete having structural uses, masonry, etc. As set out in column 1, commencing at line 11, the paragraph states that the background to Bland's invention deals with curing consolidated combustion ash materials which have been standardized for use as a normal weight and lightweight aggregate for use in structural or land fill applications. It is respectfully submitted, that there is simply no justification whatsoever for the examiner's comment

that one reading the Bland reference would be in any way motivated to take the normal weight and lightweight aggregate and use it for any other purpose beyond that specifically disclosed in Bland. In particular, the entire point of Bland appears to be to create a material that does not necessarily have any fuel or combustion value whatsoever. While Bland may in fact deal with ash, there is nothing whatever that would teach one of ordinary skill to feed the product of Bland into a combustor. It is respectfully submitted that to say that a material which is suitable as a building material should therefore necessarily be easily and readily thought of as a fuel or a desired chemical reactant for a furnace, is simply totally unsupported.

It is respectfully submitted that an ordinarily skilled person reading Bland would discard the reference entirely as being a reference solely involved in making aggregate for use in construction processes and that the reference otherwise is totally irrelevant to the combustion process, let alone the specific sulphur dioxide capture issues which are dealt with by the present application.

Because Bland is a completely different process, it is submitted there are significant differences in any event of the product and process of Bland and the current process. The examiner has extrapolated Bland by saying that because Bland teaches that the mixers reduce the pore volume of the ash, that that teaching suggests the ash is ground to smaller particle size. The examiner has acknowledged that Bland does not specifically teach that the ash and water are ground. It is submitted there is no support for the examiner's speculation that reduction of pore volume arises because of grinding. It is respectfully submitted that pore volume reduction is most likely caused by the hydration of the calcium component because of swelling of the calcium oxide core particle when it is hydrated. This is likely to reduce both the pore volume within individual particles and also the interstitial space between the particles. Size alone does not necessarily change particle packing density.

Further, in the examiner's comments, the examiner makes reference to the fact that Bland teaches that ash and water are mixed in a Hobart mixer at high energy. The examiner indicates that Bland teaches that this high energy mixing reduces the pore volume of the ash. Then it is pointed out that Bland as stated by the examiner does not teach grinding. It is also not clear what is the particular space that is being referred to in Bland. There is a space between particles on the one hand and on the other hand pore volume may be the volume within the particles themselves. There is no explanation of the term "pore size" within Bland, probably because Bland is concerned with other physical chemistry issues. Thus, the correlation between the fact that Bland teaches high energy mixing and grinding, cannot be drawn.

In respect of all of the foregoing, it is respectfully submitted that Bland cannot be combined with WO. WO in fact appears to be addressing a problem that would exist if the Bland process could not be utilized. Bland suggests that the fly ash be used for non-combustion processes. WO on the other hand goes in a completely different direction, saying where that is not economical, one can use the fly ash when treated in accordance with the WO technology for reintroduction into a combustion process. The two patents thus teach alternative uses of fly ash and are alternatives, not combinable technologies.

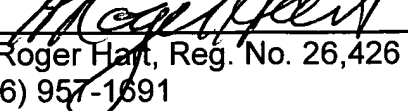
In view of all of the foregoing, it is respectfully submitted that claims 27 and 28 clearly distinguish over the examiner's attempted combination of Bland and WO and that these claims and all other claims dependent directly or indirectly thereon are allowable.

Appln. No. 10/073,063  
Amdt. dated April 4, 2006  
Reply to Office action of 12/06/2005

In the enclosed Petition for Extension of Time, we have paid the necessary fees for an extension of time of one month to respond to the examiner's action.

Respectfully submitted,

Respectfully submitted,  
Bereskin & Parr

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